

## CULTURAL INFLUENCES AND SYMPTOM CHOICE: CLAY-EATING CUSTOMS IN RELATION TO THE ETIOLOGY OF PICA<sup>1</sup>

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The role of cultural influence in symptom choice was examined in a study of the etiology of pica in children. Interviews with mothers of children with and without pica showed that: (a) mothers of children with pica more frequently come from communities where clay-eating and starch-eating are a part of the culture than do mothers of children with other behavior problems; (b) mothers of children with pica more frequently have had pica themselves, as adults, than have mothers of children without pica; (c) some mothers teach pica to their children; (d) when cultural influences encourage the mother in the use of oral satisfaction as a means of coping with the child's anxiety, this may be continued by the child in the form of pica.

The question of the relationship between symptom choice and the various biological, psychological, sociological, and cultural factors acting on the individual is one which is still plaguing the behavioral scientists. Although clinicians have also been prolific researchers, little progress has been made in the development of formulas for predicting the particular behavior patterns which an individual might select when subjected to stress. A study of factors related to the etiology of pica in children suggests that cultural influences may be important in the choice of this particular symptom by certain children as they attempt to cope with anxiety.

Pica is usually defined as a craving for "unnatural" foods. For purposes of this paper it will be defined as an abnormal appetite for substances not fit for food, leading to repeated ingestion of such substances beyond the age when hand-to-mouth activity is considered to be part of the normal developmental pattern. Gesell and Amatruda (1941, pp. 49, 190, 200) indicate that hand-to-mouth activity should begin to drop out of the picture by the end of the first year of life but pediatricians commonly report that eating dirt, sand, and other non-

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edible substances continues to be a problem in the toddler who is interested in exploring the world by any means available to him. Persistent pica beyond a year and a half to two years is usually considered an abnormal habit.

The present report is based on a multi-disciplinary study of pica which has been carried on since 1954 at the Research Foundation of the Children's Hospital of the District of Columbia. The study was initiated on the basis of concern with the problem of prevention and treatment of lead poisoning in children but the principal focus of the study has been on clarifying the psychodynamics of pica as a condition perhaps analogous to addiction in adults.

Various factors hypothesized as being related to pica have been studied by the Children's Hospital research team. An evaluation of the nutritional status of children with and without pica revealed no significant nutritional differences between the two groups, and nutritional supplements were found no more effective in curing children of pica than were placebos (Gutelius, et al, 1962; 1963). However, psychiatric and psychological studies of children and their parents revealed a pattern of mother-child relationships associated with pica which was found much less frequently in association with other types of behavior problems. Preliminary reports of the psychiatric-psychological findings have been published (Millican, Lourie, and Layman, 1956; Lourie, Layman, Millican, Sokoloff, and Takahashi, 1959), and a final report is now in preparation. It is the purpose of the present aspect of the study to explore the possible role of cultural factors in the choice of pica as a symptom.

## METHOD

### *Individual Studies*

To implement the studies on pica, the research team set up at Children's Hospital a pica clinic which met twice a month and was a combination research and service clinic. This was staffed by psychiatrists, clinical psychologists, pediatricians, and a medical social worker. For each child admitted to Children's Hospital, either as an in-patient or as an out-patient, the admission interview included questions about pica. Every child with pica was referred to the pica clinic for evaluation and treatment. Evaluations included social, psychiatric, psychological, and general medical studies, which in some instances were continued over a period of several years. Similar studies were made of two control groups—one a group of children with psychiatric problems but with no history of pica, the other a group of "normals." With two exceptions, all of the children studied were over 18 months of age at the time of initial contact, and they ranged in age up to 14 years. In the course of obtaining history material, questions were asked concerning pica, alcoholism, and addiction in other members of the family and concerning customs with reference to clay-eating and starch-eating in the communities from which the parents came. Additional information along

these lines was obtained from the mothers in subsequent interview contacts. With the assistance of visiting nurses, information was made available from a larger group of mothers, who were interviewed to get a picture of the prevalence of pica in the Washington, D.C. area. Counting information from all sources, mothers of more than a thousand children were questioned about pica and other oral habits.

### *Group Interviews*

After completion of individual studies of 125 children with pica, 33 children with other psychiatric problems, and 47 normals, two group interviews were held with mothers of children with pica, these mothers being selected as having come from communities where clay-eating was common or as having had pica themselves. Sixteen mothers accepted the invitation to participate in a group interview, with half of them participating in each session. Because the group interviews focused on clay-eating and starch-eating customs among the southern Negroes, only Negro mothers were included in these groups.

The groups met around a refreshment table, with the discussion taking place informally, while the mothers ate cookies and cake and drank coffee. Present in each of the discussion groups, in addition to the mothers, was a psychiatrist, a psychologist, and a social worker. (A second social worker was present at the second interview.) The psychologist functioned as group leader; the psychiatrist made occasional comments, asked for clarification or further information, or answered questions; the social worker served as observer and took notes. Both sessions were tape-recorded.

After a preliminary get-acquainted period of about 15 minutes, the group leader introduced the session with the following statement:

For about five years now we have been trying to help mothers whose children have been sick because of eating things not usually considered to be food, and mothers have been working with us in trying to keep their children from eating things like paint, plaster, crayons, and dirt. In trying to help mothers one thing we've been doing is finding out as much as we can about why children put things in their mouths and want to eat things that sometimes are harmful to them. When we were looking into the question of why children do this, we learned that lots of adults like to eat things that aren't food, and we found out that in many different countries people eat things like clay and sand and pebbles. In our own country we find this in some states but not in others. We've learned that in the northern states most people never heard of eating things like clay and starch, but it's possible that they like to eat things that most southerners wouldn't think were fit for anyone's stomach. It may be also that women in some parts of the country smoke more than those in other parts of the country. And we've learned that in some of the southern states clay-eating and starch-eating are very common. We feel that if we understood more about these customs of eating clay and starch we might understand better why children want to eat things like plaster and paint. Since some of you ladies know much more

about this than we do, we've asked you to come here today to share with us some of your knowledge and experiences so that we can be better equipped to help other mothers.

In the group interviews the leader's verbalizations consisted of (a) a general introduction, (b) requests for information, (c) questions, (d) restatement of information obtained or reflection of feeling expressed, (e) indications of simple acceptance—"Yes," "I see," "Mh-hm," etc., and (f) answers to questions asked. Questions consisted of asking for more details about clay-eating and starch-eating customs, asking for attitudes about various oral habits, and asking for clarification or elaboration of statements.

### *Analysis of Data*

Mothers of children in pica and control groups, studied individually, were compared in terms of frequency of coming from the south and incidence of pica in the mothers. These data were analyzed by Fisher's exact test. No quantitative analysis was made of the material on clay-eating and starch-eating customs.

## RESULTS AND DISCUSSION

### *Geographic Origins and Pica in Mothers*

Studies on the incidence of pica showed it to be more prevalent among Negro children than among white children in the Washington, D.C. area (Millican, Layman, Lourie, Takahashi and Dublin, 1962). However, since the Negro population in the area is largely a lower-class and lower middle-class population and the white population is largely middle-class and upper middle-class, the apparent racial differences might be related to socioeconomic factors. Bradley and Bessman (1958) have pointed out that pica and lead poisoning tend to be associated with poverty and slum conditions.

Significant from the standpoint of our present problem is the fact that mothers of children with pica differed from mothers of children with other problems in terms of their geographic origins and presence of pica in the mothers themselves. As shown in Table 1, a significantly

TABLE 1  
GEOGRAPHIC ORIGINS OF MOTHERS

Mother's Home State or Country	Classification of Children					
	Pica (N = 117)		Psychiatric (N = 31)		Normal (N = 47)	
	No.	%	No.	%	No.	%
D. C.	34	29.06	14	45.16	19	40.43
*Southeast U.S.	56	47.86	7	22.58	25	53.19
Other States	22	18.80	9	29.03	3	6.38
Foreign Countries	3	2.56	1	3.23	0	0.00
Not Reported	2	1.71	0	0.00	0	0.00

\*Number of mothers coming from southeastern states is significantly greater for normals and children with pica than for those with other psychiatric problems, with  $p < .01$  on a two-tail test.

greater number of mothers of children with pica come from the southeastern states than is true for mothers of children with other behavior problems. Most of the Negro mothers from the south indicated that they were familiar with clay-eating and starch-eating customs, whether or not they had engaged in such. Although there were no more mothers of children with pica than mothers of normal children coming from the south, a significantly greater number of mothers of picas admitted to a history of pica in themselves than was true for the mothers in either of the control groups. This is shown in Table 2. (The *N* for the psy-

TABLE 2  
INCIDENCE OF PICA IN MOTHERS

Mothers of Picas (Pi)		Mothers of Psychiatric Controls (Ps)		Mothers of Normal Controls (No)	
No.	%	No.	%	No.	%
55	60.44	5	27.78	8	17.02

Difference, Pi-Ps,  $p < .05$ , two tails  
 Difference, Pi-No,  $p < .001$ , two tails  
 Difference, Ps-No,  $p > .20$ , two tails

chiatric control group for this comparison is only 18, because some of the children with psychiatric problems were studied before the pica project was started, and whether or not the mother had pica was not always known. However, questioning of other mothers not included in this study has yielded results indicating that these findings are representative.) A few psychiatric control mothers ate starch when pregnant, but only mothers of children with pica had pica as adults when they were not pregnant. The eating of laundry starch was the most common form of pica in these women, but ingestion of clay, plaster, paper, and other substances was reported. In general, the mothers with past or present pica had a tolerant attitude toward pica in their children and several of them even shared their starch with the children.

#### *Geophagy and Related Habits*

Geophagy or clay-eating has been reported to exist in many parts of the world, particularly among primitive peoples (Laufer, 1930; Anell and Lagercrantz, 1958). It is not very prevalent in modern Europe, where it is usually considered a symptom of abnormality. In Asia it apparently no longer occurs extensively except in times of famine, but it is common in Indonesia, Australia, Africa, the West Indies, Central America, and some parts of South America, as well as in the southern part of the United States and among some Indian tribes of the western hemisphere. In some localities clay-eating is associated with the presence of intestinal parasites, especially hookworm disease, but it exists also in localities where hookworm disease is not known. Some clay-eaters

believe the earth to have medicinal properties, particularly for curing digestive disorders and diarrhea. In many places clay is eaten by pregnant women, who believe that this will make delivery easier and will produce a stronger baby or a baby of a suitable color. Sometimes earth is mixed with food to supplement it or improve its taste. Frequently it is eaten as a special treat. In many places it is associated with religion and the swearing of oaths. In the latter practice, it is customary to eat earth from the grave of some holy person or from an earth shrine, before or after swearing to one's innocence of some crime or misdemeanor of which one is suspected. Allegedly, if one is lying his stomach will swell up and burst; if he is telling the truth the earth will cause him to thrive. In some parts of Mexico and Guatemala, where the population is mostly Negro and Indian, cakes of white clay called "Santa Tierra" are sold in connection with the Black Christ festival. The clay comes from a special place known as a sacred cave and each cake has imprinted on it the figure of the crucified Christ. These pieces of clay are eaten like candy or cookies, or are dissolved in water for drinking. It is believed by those engaging in this practice that the person consuming this clay will be cured of whatever ailment he happens to have.

Geophagy is said to have been known among the Indians of North America since before the time of Columbus, but that which is of particular interest to us is the clay-eating found among the American Negroes and among the poor whites in the southeastern part of the United States. The medical literature of pre-Civil War days (see Cooper, 1957) refers to such practices among the slaves, and from the descriptions of these practices it is apparent that they were very similar to those found among the Negroes in those parts of Africa from which the slaves originally came, representing a part of the African heritage of the American Negro. The original significance of the geophagical customs has faded out of the picture in most localities now, but the practice continues.

From individual and group interviews we have learned that, in different parts of the south, different kinds of clay are used for eating. The most popular are the red clay and white clay, but some of our mothers have mentioned yellow, grey, and black clay as being considered edible. In localities where both red and white clay (the white is actually a very light grey) are available the preference is usually for the white clay. The white clay is described as having a "cleaner" taste than other clays. As one woman remarked, "They just ain't nothing like that nice, clean, *earthy* taste!" When asked about the taste of the clay most of the women were unable to describe the taste other than to say, "It just tastes good." One mother described the taste of yellow clay as "sour," and studies made in Alabama (Edwards, McDonald, Mitchell, Jones, Mason, Kemp, Laing and Trigg, 1959), North Carolina (Hertz, 1947), and Mississippi (Dickens and Ford, 1942) have indicated that white and red clay also are sour, although there have been occasional reports of clays with a "sweetish" taste (Anell and Lagercrantz, 1958).

In stating that the clay tastes good, most of our mothers are apparently referring to the texture. The clay is described as smooth, gritty, or gummy, and these qualities are related to the enjoyment or lack of enjoyment of different kinds of clay.

In some communities there is a clay pit where clay for eating is obtained. In others, clay is dug from the bank of a creek or river, from special places at the side of the road, from around the roots of a tree, or from a mine. In some localities clay is used like mortar, and this is dug out from between the bricks of a white-washed chimney or fire place and eaten. Its smoky taste is considered to be particularly good. In the large cities clay may be purchased by the sack, but in rural communities each person digs his or her own supply of dirt for eating. If the clay is hard and dry when it comes from the ground it may be eaten raw, but many prefer to bake it in the oven until it is hard, then pound it into small pieces and eat it with salt and pepper.

In the past clay-eating was engaged in by both men and women, but now it is a habit found almost exclusively among women and children, with very few men practising it. Most of our informants had never heard of clay-eating among men. When asked to explain this, the mothers indicated that the men had more outside activities to occupy them than did the women, and that the men had other oral satisfactions such as drinking and smoking.

Some clay-eaters like to eat their clay when alone; others prefer to eat it in the company of friends. One woman described community quilting bees, with each woman bringing her bag of clay to munch on during the party. There is general agreement among our informants that clay is not usually eaten because of hunger and many like to eat it immediately after finishing a meal.

Most of our group of mothers who had been clay-eaters indicated that they had started the habit when they were children and had seen their mothers or grandmothers eating clay. A few started clay-eating during pregnancy, having been introduced to it by a friend or relative. When questioned concerning the attitude of their parents and grandparents toward clay-eating, most of the women said their parents had told them that it wasn't good for them. Some had been told only that "children can't eat what grownups eat." Others had been warned about "clay tumors" or "dirt tumors" or about constipation. Few could say why they had started to eat clay but several described *cravings* which could not be satisfied except by eating clay.

In southern communities where clay-eating is known, laundry starch also is commonly ingested. Edwards and her co-workers (1954; 1959) have described starch-eating practices in Alabama and Georgia, Hertz (1947) and Whiting (1947) report on their existence in North Carolina, and Ferguson and Keaton (1950) have found such practices in Mississippi. It is quite common among Negro women in Washington,

D.C. In our study, some of the mothers had never eaten clay but had eaten starch since childhood. Several who had eaten both clay and starch expressed a preference for starch. Frequently starch-eating began during pregnancy and it may or may not have been abandoned after the baby was born. Some mothers ate starch right from the box, whereas others sprinkled salt and pepper on it. Some described the starch as "smooth" and others said it was "crunchy." Several women went into ecstasies of delight in describing the joys of starch-eating. Our mothers did not give any special reasons for starch-eating during pregnancy but one of the visiting nurses participating in the project reported a common belief that a starch-eating mother would have a lighter-skinned baby than one who did not eat starch.

Several mothers reported that they substituted starch for clay after moving to Washington, D.C., where the clay was not available. One mother who had substituted starch for clay later abandoned the starch after taking up smoking.

Most of the mothers who ate starch felt that this was cleaner than clay but several indicated that the doctor had told them it wasn't good for them, and one woman stated that starch would "dry up the blood."

The mothers interviewed were questioned about their attitudes toward dirt-eating and other forms of pica in children. The mothers of children without pica tended to say, "Oh, I wouldn't let my children do *that!*" Mothers of children with pica commonly expressed the opinion that all children eat dirt, sand, plaster, wads of gum, or other non-edible substances and that one cannot do very much about this. In general, mothers of children who had been treated for lead poisoning indicated that they hadn't realized the harmfulness of pica before the children became ill. Some still did not recognize its potentially harmful effects. One mother of a child who had suffered severe brain damage as the result of lead poisoning said, "I don't think the white clay or the red dirt is going to hurt a child because I have seen a lot of children eat dirt every day. They say a child got to get a peck of dirt so each child's going to get dirt, eat dirt, so I don't think dirt's going to hurt anything."

#### *Cultural Factors and Mother-Child Relationships*

Studies of mother-child relationships showed that mothers of children with pica differed from mothers of normal children and those with other problems in that they more frequently attempted to handle the child's anxiety by providing him with oral satisfaction. Characteristically, children with pica were weaned from the bottle quite late, with weaning occurring usually after the age of two years and postponement of weaning until age three, four, or five years being not unusual. Mothers of pica were also great users of pacifiers, with an empty nursing bottle often serving as a pacifier. When the child cried or complained, the mother made no attempt to find out what was wrong but popped the bottle or

pacifier in his mouth to stop the crying. Although the mother's reluctance to become involved with the child on a person-to-person basis cannot be blamed entirely on cultural influences, it would seem that her choice of oral satisfaction as a means of keeping the child from bothering her probably does reflect the fact that she uses oral satisfaction as a means of handling her own anxiety, and this pattern apparently is rooted in her culture.

### CONCLUSIONS

This study, supplementing previous studies on emotional aspects of pica, suggests that cultural influences may be important in relation to symptom choice when children are subjected to stress and there is an inadequate mothering relationship.

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